

Message

From: Katz, Taylor [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=ECE19564710B4FF09096D6E0163371D2-KATZ, TAYLO]
Sent: 7/9/2014 4:54:15 PM
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Subject: News Update: 'Very low levels' of toxin linked to cancer in mice (E&E Daily)

News Headline: 'Very low levels' of toxin linked to cancer in mice -- NIH study |

News Date: 07/08/2014

Outlet Full Name: Environment & Energy Daily

Contact Name: Pearson, Sam

News Text: Mice exposed to arsenic at levels similar to those found in some drinking water systems are likely to develop lung cancer, according to new research.

The study by the National Institutes of Health, published in the journal Archives of Toxicology, provides new evidence of the potential for harm arsenic poses, according to the researchers.

"This is the first study to show tumor development in animals exposed to very low levels of arsenic, levels similar to which humans might be exposed," Michael Waalkes, the lead author on the paper and director of the National Toxicology Program Laboratory, said in a statement. "The results are unexpected and certainly give cause for concern."

Arsenic, which can be found in the environment naturally or as the result of human-caused contamination, is regulated by U.S. EPA in public drinking water systems, where levels cannot exceed 10 parts per billion. No such standards exist for private drinking wells, though, and millions of Americans may consume water containing higher levels of arsenic from those sources. Other research has raised doubts about whether even the public water systems threshold is adequate to protect public health.

"Although this is only one study, it adds to a growing body of evidence showing adverse health effects from very low

exposures to arsenic, raising the possibility that no level of arsenic appears to be safe," Linda Birnbaum, the director of the National Institute of Environmental Health Sciences and the NTP, said in a statement.

Researchers at the National Toxicology Program Laboratory exposed mice to 50 parts per billion, 500 parts per billion and 5,000 parts per billion of arsenic. Fifty parts per billion is the lowest levels of arsenic to be tested so far in an animal study, the researchers said. More than half of male and female mice developed significant increases in lung tumors at 50 parts per billion and 500 parts per billion, but neither saw significant increases at 5,000 parts per billion.

The oddity "raises considerable doubt as to the reproducibility of the model as it does not make biological sense," Samuel Cohen, a professor of oncology at the University of Nebraska Medical Center, said in an email. Cohen has argued that EPA's existing arsenic standard is unnecessarily restrictive.

Scientists believe it's necessary to expose mice to higher levels of arsenic to simulate human exposure levels because their metabolic rates differ from that of humans, making the 50-parts-per-billion dose equivalent to lower human levels closer to the U.S. EPA drinking water standard. The way in which the mice were exposed to arsenic was modeled to duplicate the patterns in which humans come into contact with the chemical, according to the scientists.

U.S. EPA is working on a chemical assessment of inorganic arsenic under its Integrated Risk Assessment System program, which reviews existing science to determine whether a chemical poses a health threat (Greenwire, June 27). Industry groups have contended that arsenic is safe at low levels, a position the new research calls into question.

Other research has found that EPA's arsenic standard may be too high to adequately protect public health, and EPA scientists have found that if 100,000 Americans consumed the current legal limit for arsenic, 730 of them would eventually contract lung or bladder cancer, according to the Center for Public Integrity.

Research that would justify lowering the drinking water standard for arsenic or regulating it from private wells could mandate extensive safety improvements in small water systems nationwide.

Kathy Burns, the director of Sciencecorps, a group of environmental scientists and toxicologists, said the findings didn't come as a surprise.

"It's almost like asking, 'If you stand in the middle of a highway and a semi hits you, are you going to get hurt?'" Burns said.

Taylor Katz
Science Communications Intern
National Center for Environmental Assessment
(ph) 703.347.0445
katz.taylor@epa.gov